

Appl. No. 10/040,063
Amdt. Dated June 5, 2006
Reply to Office Action of March 3, 2006

REMARKS

Claims 1 to 8 and 10 to 19 are currently pending in the present application. Claims 1, 8, and 14 are amended herein. No new matter has been added by the amendments.

Claim 1 stands objected to due to informalities in claim language. Specifically, claim 1 recites a misspelled word "pinots". Claim 1 has been amended to replace "pinots" with "points". Applicants respectfully submit that claim 1 is now in appropriate form.

Claims 1 to 4, 6, 8, 10 to 17 and 19 stand rejected by the Action under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 6,437,338 to Hoffman (hereinafter "Hoffman") in view of U.S. Patent No. 5,530,935 to Dillen (hereinafter "Dillen"). In addition, claims 5, 10 and 18 stand rejected under 35 U.S.C. § 103(a) as being obvious over Hoffman in view of Dillen and further in view of U.S. Patent No. 4,736,401 to Donges (hereinafter "Donges"). Further, claim 7 stands rejected under 35 U.S.C. § 103(a) as being obvious over Hoffman in view of Dillen and further in view of U.S. Patent No. 6,713,773 to Lyons (hereinafter "Lyons").

The combination of Hoffman and Dillen fails to teach the invention as set forth in amended claims 1, 8 and 14. Claim 1 is now directed to a method of reading out a selected image comprising the steps of: selecting a region of interest of the sensor for which the desired temporal resolution of the image is higher than that for unselected regions of the sensor; collecting and storing information from the unselected regions for reading at a later stage, and separately reading each of the image points to provide an image. Claim 1 now further claims that the prolonged integration of the exposure in the unselected regions results in an improved local signal-to-noise ratio and higher image quality said regions. Independent claim 8 has similarly been amended to claim a device that collects and stores information from unselected image points for reading at a later stage, wherein a prolonged integration of an exposure in the unselected image points

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results in an improved local signal-to-noise ratio and a higher image quality in the unselected regions. Independent claim 14 has also been amended to claim a device being adapted to collect and store information from image points outside the region of interest for reading at a later stage, wherein a prolonged integration of the exposure in the image points outside the region of interest results in an improved local signal-to-noise ratio and a higher image quality.

As has been established, Hoffman is directed to a method and apparatus for scanning a detector array in an x-ray imaging system. As conceded by the Examiner in prior Actions for the above-referenced application, Hoffman is not concerned with temporal resolution, as is clearly claimed in independent claims 1, 8 and 14 of the subject application. Rather, Hoffman merely discloses a scanning means employing spatial resolution. The Action then cites Dillen for disclosing a method for achieving higher temporal resolution for regions of interest. However, Dillen fails to disclose the invention as now claimed in independent claims 1, 8 and 14. Specifically, Dillen is directed to an x-ray examination apparatus where "image readout is substantially accelerated. This is achieved by discarding portions of the electronic image that is [sic] stored in the image-storage part of the CCD" (emphasis added).

Specifically, Dillen is completely silent and does not teach or suggest a method or device for reading out regions of interest at a higher scanning rate than other regions by selecting a region of interest of the sensor for which the desired temporal resolution of the image is higher than that for unselected regions of the sensor; collecting and storing information from the unselected regions for reading at a later stage, and separately reading each of the image points to provide an image, as is claimed in claims 1, 8 and 14. Dillen further fails to disclose a method or device wherein the prolonged integration of the exposure in the unselected regions results in an improved local signal-to-noise ratio and higher image quality said regions. In contrast any increased rate of read-out in Dillen is achieved simply by discarding portions of the electronic image that is stored in the

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image-storage part of the CCD, thereby limiting the final image to the area that was read out at an increased rate.

As stated in the subject application, methods for limiting the reading out of an image to the image points or rows situated in the relevant part, such as the method disclosed by Dillen, are known in the art (page 1, lines 14 to 18). Such methods enable the image points that are situated in the region of interest to be read out at a higher speed, because they get a turn more often within the same duration of a single read out pulse for an image point or a row, while discarding the portions of the image that are not of interest.

In contrast, claims 1, 8 and 14 of the present invention now clearly claim a method and device wherein image lines that are not read out and have not been addressed in a given clock period or cycle usually remain unaffected for further use. According the the method and devices of claims 1, 8 and 14, during the reading out of a line, no lines in the vicinity are affected. Accordingly, no information is lost from the unselected regions that are less frequently scanned, because the image information contained therein is collected for reading a plurality of images at a later stage, for example as a charge. Unlike in the case of, for example image sources based on CCD as disclosed by Dillen, which require discarding portions of the image to achieve acceleration of an image readout, the method of claim 1 and the devices of claims 8 and 14 achieve a benefit over the prior art in that a complete reading out of the image is not required each time a scan is completed. Moreover, due to the prolonged integration of the exposure in the unselected regions, an improved local signal-to-noise ratio and hence in imaging of higher quality results in the unselected regions. Thus, the method of claim 1 and devices of claims 8 and 14 enable the selected region of an image to be reproduced with a higher scanning rate and hence with a higher temporal resolution. Unselected regions that are less interesting are reproduced with a lower temporal resolution, however they have a better signal-to-noise ratio because of the longer exposure of such regions. An improved overall image results.

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Donges and Lyons are cited to show additional features and do not remedy the cited deficiencies in Hoffman and Dillen. It is respectfully submitted that Hoffman, Dillen, Donges and Lyons, and combinations thereof, do not teach, among other patentable elements, a method or device for selecting a region of interest of the sensor for which the desired temporal resolution of the image is higher than that for unselected regions of the sensor; collecting and storing information from the unselected regions for reading at a later stage, and separately reading each of the image points to provide an image, as is recited in independent claims 8 and 14. Hoffman, Dillen, Donges and Lyons, further fail to disclose that a prolonged integration of the exposure in the unselected regions results in an improved local signal-to-noise ratio and higher image quality said regions.

In view of the foregoing, it is respectfully submitted that independent claims, 1, 8 and 14 are patentable over the cited combinations of Hoffman, Dillen, Donges and Lyons. Allowance thereof is therefore respectfully requested. In addition, it is respectfully submitted that claims 2 to 7, 10 to 13 and 15 to 19 should also be allowed at least based on their dependence from claims 1, 8 and 14.

Conclusion

In view of the foregoing, Applicants respectfully submit that the specification, the drawings and all claims presented in this application are currently in condition for allowance. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

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Applicants' representative believes that this response is being filed in a timely manner. In the event that any extension and/or fee is required for the entry of this amendment the Commissioner is hereby authorized to charge said fee to Deposit Account No. 14-1270. An early and favorable action on the merits is earnestly solicited.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call David Barnes, Esq., Intellectual Property Counsel, Philips North America Corporation at the number below.

Respectfully submitted,

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